

sequence patentin.ST25.txt  
SEQUENCE LISTINGRECEIVED  
CENTRAL FAX CENTER  
MAY 12 2008

&lt;110&gt; Purdue Research Foundation

&lt;120&gt; IMPROVED PSEUDOTYPED RETROVIRUSES

&lt;130&gt; 290.0050 0201

&lt;140&gt; PCT/US 03/17577

&lt;141&gt; 2003-06-04

&lt;160&gt; 2

&lt;170&gt; PatentIn version 3.2

&lt;210&gt; 1

&lt;211&gt; 2400

&lt;212&gt; DNA

&lt;213&gt; artificial

&lt;220&gt;

&lt;223&gt; plasmid pEboGP

&lt;400&gt; 1

tgggcgtgga tagcgggttg actcacgggg atttccaagt ctccacccca ttgacgtcaa	60
tgggagtttg ttttggcacc aaaatcaacg ggactttcca aaatgtcgtg acaactccgc	120
cccattgacg caaatgggag gtaggcgtgt acgggtggag gtctatataa gcagagctct	180
ctggctaact agagaacca ctgcttactg gcttatcgaa attaatcga ctactatag	240
ggagacccaa gctggctagc gtttaactt aagcttgcgt gcctgcaggt cgactctaga	300
ggatccaaca acacaatggg cgttacagga atattgcagt tacctcgtga tcgattcaag	360
aggacatcat tctttctttg ggaattatc cttttccaaa gaacattttc catccactt	420
ggagtcatcc acaatagcac attacagggt agtgatgtcg acaactagt ttgtcgtgac	480
aaactgtcat ccacaaatca attgagatca gttggactga atctgaagg gaatggagtg	540
gcaactgacg tgccatctgc aactaaaaga tgggggttca ggtccggtgt cccaccaaag	600
gtggtcaatt atgaagctgg tgaatgggct gaaaactgct acaatcttga aatcaaaaaa	660
cctgacggga gtgagtgtct accagcagcg ccagacggga ttccggggtt ccccggtgc	720
cggtatgtgc acaaagtatc aggaacggga ccgtgtgccg gagactttgc ctccataaa	780
gagggtgctt tcttctgta tgatcgactt gcttccacag ttatctaccg aggaacgact	840
ttcgtgaag gtgtcgttgc atttctgata ctgccccaaag ctaagaagga cttcttcagc	900
tcacaccctt tgagagagcc ggtcaatgca acggaggacc cgtctagtgg ctactattct	960
accacaatta gatatcaggc tacgggtttt ggaaccaatg agacagagta cttgttcgag	1020
gttgacaatt tgacctacgt ccaacttgaa tcaagattca caccacagtt tctgctccag	1080
ctgaatgaga caatatatac aagtgggaaa aggagcaata ccacgggaaa actaatttgg	1140
aagggtcaacc ccgaaattga tacaacaatc ggggagtggg ccttctggga aactaaaaaa	1200
aacctcacta gaaaaattcg cagtgaagag ttgtctttca cagttgtatc aaacggagcc	1260
aaaaacatca gtggtcagag tccggcgcga acttcttccg acccagggac caacacaaca	1320
actgaagacc acaaaatcat ggcttcagaa aattcctctg caatggttca agtgcacagt	1380
caaggaaggg aagctgcagt gtcgcattca acaacccttg ccacaatctc cagagtccc	1440
caatccctca caaccaaac aggtccggac aacagcacc ataatacacc cgtgtataaa	1500

sequence patentin.ST25.txt

```

cttgacatct ctgaggcaac tcaagttgaa caacatcacc gcagaacaga caacgacagc 1560
acagcctccg acactccctc tgccacgacc gcagccggac ccccaaaagc agagaacacc 1620
aacacgagca agagcactga cttcctggac cccgccacca caacaagtcc ccaaaaccac 1680
agcgagaccg ctggcaacaa caacactcat caccaagata ccggagaaga gagtgccagc 1740
agcgggaggc taggcttaat taccaatact attgctggag tcgcaggact gatcacaggc 1800
gggagaagaa ctggaagaga agcaattgtc aatgctcaac ccaaattgcaa ccctaattta 1860
cattactgga ctactcagga tgaagggtgct gcaatcggac tggcctggat accatatttc 1920
gggccagcag ccgagggaat ttacatagag gggctaattg acaatcaaga tggtttaatc 1980
tgtgggttga gacagctggc caacgagacg actcaagctc ttcaactgtt cctgagagcc 2040
agaactgagc tacgcacctt ttcaatcctc aaccgtaagg caattgattt cttgctgcag 2100
cgatggggcg gcacatgcc aattctggga ccggactgct gtatcgaacc acatgattgg 2160
accaagaaca taacagacaa aattgatcag attattcatg attttgttga taaaaccctt 2220
ccggaccagg gggacaatga caattggtgg acaggatgga gacaatggat accggcaggt 2280
attggagtta caggcgttat aattgcagtt atcgctttat tctgtatatg caaatttgtc 2340
ttttagtttt tcttcagatt gcttcattga aaagctcagc ctcaaataca tgaaaccaga 2400

```

<210> 2  
 <211> 6708  
 <212> DNA  
 <213> artificial

<220>  
 <223> plasmid pEboGPdelta309-489

```

<400> 2
gacggatcgg gagatctccc gatccccctat ggtcgactct cagtacaatc tgctctgatg 60
ccgcatagtt aagccagtat ctgctccctg cttgtgtgtt ggaggctcgt gagtagtgcg 120
cgagcaaaa ttaagctaca acaaggcaag gcttgaccga caattgcag aagaatctgc 180
ttagggttag gcgttttgcg ctgcttcgcg atgtacgggc cagatatacg cgttgacatt 240
gattattgac tagttattaa tagtaatcaa ttacgggggc attagttcat agcccatata 300
tggagtccg cgttacataa cttacggtaa atggcccgcc tggctgaccg cccaacgacc 360
cccgccatt gacgtcaata atgacgtatg ttcccatagt aacgccataa gggactttcc 420
attgacgtca atgggtggac tatttacggg aaactgcca cttggcagta catcaagtgt 480
atcatatgcc aagtacgccc cctattgacg tcaatgacgg taaatggccc gcctggcatt 540
atgccagta catgacctta tgggactttc ctacttgga gtacatctac gtattagtca 600
tcgctattac catggtgatg cggttttggc agtacatcaa tgggcgtgga tagcggtttg 660
actcacgggg atttccaagt ctccaccca ttgacgtcaa tgggagtttg ttttggcacc 720
aaaatcaacg ggactttcca aaatgtcgt acaactccgc ccattgacg caaatgggcg 780
gtaggcgtgt acgggtggag gtctatataa gcagagctct ctggctaact agagaacca 840
ctgcttactg gcttatcgaa attaatcga ctcactatag ggagacccaa gctggctagc 900
gtttaaactt aagcttgcag gcctgcaggt cgactctaga ggatccaaca acacaatggg 960
cgttacagga atattgcagt racctcgtga tcgattcaag aggacatcat tctttctttg 1020

```

sequence patent.in.ST25.txt

ggtaattatc cttttccaaa gaacattttc catccactt ggagtcaccc acaatagcac	1080
attacaggtt agtgatgtcg acaaactagt ttgtcgtgac aaactgtcat ccacaaatca	1140
attgagatca gttggactga atctcgaagg gaatggagt gcaactgacg tgccatctgc	1200
aactaaaaga tggggcttca ggtccggtgt cccaccaaag gtggtcaatt atgaagctgg	1260
tgaatgggct gaaaactgct acaatcttga aatcaaaaaa cctgacggga gtgagtgtct	1320
accagcagcg ccagacggga ttcggggctt cccccggtgc cggtatgtgc acaaagtatc	1380
aggaacggga ccgtgtgctg gagactttgc cttccataaa gaggggtgctt tcttcctgta	1440
tgatcgactt gcttccacag ttatctaccg aggaacgact ttcgctgaag gtgtcgttgc	1500
atttctgata ctgccccaaag ctaagaagga cttcttcagc tcacaccctt tgagagagcc	1560
ggtcaatgca acggaggacc cgtctagtgg ctactattct accacaatta gatatcaggc	1620
taccggtttt ggaaccaatg agacagagta cttgttcgag gttgacaatt tgacctacgt	1680
ccaacttgaa tcaagattca caccacagtt tctgctccag ctgaatgaga caatatatac	1740
aagtgggaaa aggagcaata ccacgggaaa actaatttgg aaggtaacc ccgaaattga	1800
tacaacaatc ggggagtggg ctttctggga aactaaaaaa aacctcacta gaaaaattcg	1860
cagrgaagag ttgtctttct ctagagcagg actgatcaca ggcgggagaa gaactcgaag	1920
agaagcaatt gtcaatgctc aacccaaatg caaccctaatt ttacattact ggactactca	1980
ggatgaaggt gctgcaatcg gactggcctg gataccatat ttcgggccag cagccgaggg	2040
aatttacata gaggggctaa tgcacaatca agatgggtta atctgtgggt tgagacagct	2100
ggccaacgag acgactcaag ctcttcaact gttcctgaga gccacaactg agctacgac	2160
cttttcaatc ctcaaccgta aggcaattga tttcttgctg cagcgatggg gcggcacatg	2220
ccacattctg ggaccggact gctgtatcga accacatgat tggaccaaga acataacaga	2280
caaaattgat cagattattc atgattttgt tgataaaacc cttccggacc agggggacaa	2340
tgacaattgg tggacaggat ggagacaatg gataccggca ggtattggag ttacaggcgt	2400
tataattgca gttatcgctt tattctgtat atgcaaaatt gtcttttagt tttcttcag	2460
attgcttcat ggaaaagctc agcctcaaatt caatgaaacc aggatttaatt tatatggatt	2520
acttgaatct aagattactt gacaaatgat aatataatac actggagcctt taaacatagc	2580
caatgtgatt ctaactcctt taaactcaca gttaatcata aacaaggttt gaggtaccga	2640
gctcgaattc tgcagatata cagcacagtg gcggccgctc gagtctagag ggcccgttta	2700
aaccgcgtga tcagcctcga ctgtgccttc tagttgccag ccattctgtt tttgcccctc	2760
ccccgtgcct tccctgacct tgggaagggtgc cactccact gtcttttctt aataaaatga	2820
ggaaattgca tcgcattgtc tgagttaggtg tcattctatt ctgggggggtg ggggtgggca	2880
ggacagcaag ggggaggatt ggggaagacaa tagcaggcat gctggggatg cgggtgggctc	2940
tatggcttct gaggcggaaa gaaccagctg gggctctagg gggatcccc acgcgccctg	3000
tagcggcgca ttaagcgcgg cgggtgtgggt gggttacgcg agcgtgaccg ctacacttgc	3060
cagcgcccta gcgcccgtc ctttcgctt cttcccttc tttctgcga cgttcgccg	3120
ctttccccgt caagctctaa atcggggcat ccttttaggg ttccgattta gtgctttacg	3180
gcaccccgac ccaaaaaaac ttgattagggt tgatgggtca cgtagtgggc catcgccctg	3240

sequence patent.in.ST25.txt

atagacggtt tttcgccctt tgacgttggg gtccacgttc tttaatagtg gactcttggt	3300
ccaaactgga acaacactca accctatctc ggtctattct tttgatttat aagggatttt	3360
ggggatttcg gcttattggt taaaaaatga gctgatttaa caaaaattta acgcgaatta	3420
attctgtgga atgtgtgtca gttagggtgt ggaaagtccc caggctcccc aggcaggcag	3480
aagtatgcaa agcatgcata tcaattagtc agcaaccagg tgtggaaagt ccccaggctc	3540
cccagcaggc agaagtatgc aaagcatgca tctcaattag tcagcaacca tagtcccgcc	3600
cctaactccg cccatcccgc ccctaactcc gccaggtcc gccattctc cgccccatgg	3660
ctgactaatt ttttttattt atgcagaggc cgaggccgcc tctgcctctg agctattcca	3720
gaagtagtga ggaggctttt ttggaggcct aggccttttg aaaaagctcc cgggagcttg	3780
tatatccatt ttcggatctg atcagcacgt gttgacaatt aatcatcggc atagtatatc	3840
ggcatagtat aatacgacaa ggtgaggaaac taaaccatgg ccaagttagc cagtgccgtt	3900
ccggtgtca ccgcgcgcga cgtcgccgga gcggtcgagt tctggaccga ccggtcggg	3960
ttctccggg acttcgtgga ggacgacttc gccggtgtgg tccgggacga cgtgacctg	4020
ttcatcagcg cgggtccagga ccagggtgtg ccggacaaca cctggcctg ggtgtgggtg	4080
cgcggcctgg acgagctgta cgccgagtg tggagggtcg tgtccacgaa cttccgggac	4140
gcctccgggc cggccatgac cgagatcggc gagcagccgt gggggcggga gttcgcctg	4200
cgcgaccgg ccggcaactg cgtgcacttc gtggccgagg agcaggactg acacgtgcta	4260
cgagatttcg attccaccgc cgccttctat gaaagggttg gcttcggaat cgttttcgg	4320
gacgccggct ggatgatcct ccagcgcggg gatctcatgc tggagtctt cgccccccc	4380
aaattgttta ttgcagctta taatggttac aaataaagca atagcatcac aaatttcaca	4440
aaataagcat ttttttact gcattctagt tgtggttgt ccaaaactcat caatgtatct	4500
tatcatgtct gtataccgtc gacctctagc tagagcttgg cgtaatcatg gtcatagctg	4560
tttcctgtgt gaaattgtta tccgctcaca attccacaca acatacgagc cgggaagcata	4620
aagtgtaaag cctgggggtgc ctaatgagtg agctaactca cattaattgc gttgcgctca	4680
ctgcccgtt tccagtcggg aaacctgtcg tgccagctgc attaatgaat cggccaacgc	4740
gcggggagag gcggtttgcg tattgggagc tcttcgctt cctcgtctac tgactcgtg	4800
cgtcgggtcg ttcggctgcg gcgagcggta tcagctcact caaaggcggg aatacgggta	4860
tccacagaat caggggataa cgcaggaaa gacatgtgag caaaaggcca gcaaaaggcc	4920
aggaaccgta aaaaaggccgc gttgctggcg tttttccata ggctccgccc ccctgacgag	4980
catcacaaaa atcgacgctc aagtcagagg tggcgaaacc cgacaggact ataaagatac	5040
caggcgtttc cccctggaag ctccctcgtg cgtctcctg ttccgacctt gccgcttacc	5100
ggataacctgt ccgcctttct cccttcggga agcgtggcgc tttctcaatg ctcacgctgt	5160
aggatatctc gttcgggtga ggtcgttcgc tccaagctgg gctgtgtgca cgaaccccc	5220
gttcagccc accgctgcgc cttatccggt aactatcgtc ttgagtcaa cccggtaaga	5280
cacgacttat cgccactggc agcagccact ggtaacagga ttagcagagc gaggtatgta	5340
ggcggtgcta cagagttctt gaagtgggtg cctaactacg gctacactag aaggacagta	5400
tttggtatct gcgctctgct gaagccagtt accttcggaa aaagagttgg tagctcttga	5460

sequence patentin.ST25.txt

tccggcaaac aaaccaccgc tggtagcggg ggtttttttg ttgcaagca gcagattacg	5520
cgcagaaaaa aaggatctca agaagatcct ttgatctttt ctacggggtc tgacgctcag	5580
tggaacgaaa actcacgtta agggattttg gtcargagat tatcaaaaag gatcttcacc	5640
tagatccttt taaattaaaa atgaagtctt aaatcaatct aaagtatata tgagtaaaact	5700
tggcttgaca gttaccaatg cttaatcagt gaggcaccta tctcagcgat ctgtctatct	5760
cgttcattca tagttgcctg actccccgtc gtgtagataa ctacgatacg ggagggccta	5820
ccatctggcc ccagtgcctg aatgataccg cgagaccac getcaccggc tccagattta	5880
tcagcaataa accagccagc cggaagggcc gagcgagaa gtggctctgc aactttatcc	5940
gcctccatcc agtctattaa ttgttgccgg gaagctagag taagtagttc gccagttaat	6000
agtttgcgca acgttgctgc cattgctaca ggcacgtgg tgctacgctc gtcgtttggt	6060
atggcttcat tcagctccgg ttcccaacga tcaaggcgag ttacatgatc ccccatgttg	6120
tgcaaaaaag cggttagctc cttcggctct ccgatcgctg tcagaagtaa gttggccgca	6180
gtgttatcac tcatgggtat ggcagcactg cataattctc ttactgtcat gccatccgta	6240
agatgctttt ctgtgactgg tgagtactca accaagtcac tctgagaata gtgtatgagg	6300
cgaccgagtt gctcttgccc ggcgtcaata cgggataata ccgcgccaca tagcagaact	6360
ttaaaagtgc tcatcattgg aaaacgttct tcggggcgaa aactctcaag gatcttaccg	6420
ctgttgagat ccagttcgat gtaaccact cgtgcaccca actgatcttc agcatctttt	6480
actttcacca gcgtttctgg gtgagcaaaa acaggaaggc aaaatgccgc aaaaaagga	6540
ataagggcga cacggaaatg ttgaatactc atactcttcc tttttcaata ttattgaagc	6600
atttatcagg gttattgtct catgagcgga tacatatttg aatgtattta gaaaaataaa	6660
caaatagggg ttccgcgcac atttccccga aaagtgccac ctgacgct	6708